

# GEO TIMES

Successor to the Geological Newsletter



**March 1957**

Volume 1, No. 9

Published Monthly by the  
American Geological Institute

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# Calendar

**Cooperation of Society Secretaries in supplying meeting notices for GEOTIMES calendar is requested.**

- Mar. 3-9, 1957—ASP - ACSM Consec. mtgs., and co-exhibit, Shoreham Hotel, Washington, D.C.
- Mar. 10-16, 1957—SECOND NUCLEAR ENGINEERING & SCIENCE CONGRESS, sponsored by EJC, AGI participating. Convention Hall, Phila., Pa.
- Mar. 19-21, 1957—AMER. METEOROLOGICAL SOC., 151st Nat. Mtg., Univ. of Chicago, Chicago, Ill.
- April 1, 1957—AGT, Cent. Sec., 9:00 AM, Kiel Audit. Conv. Hall. Comm. room C, St. Louis, Mo.
- April 1-4, 1957—A.A.P.G., National Convention, Kiel Auditorium, St. Louis, Mo.
- April 5, 6, 1957—PACIFIC SOUTHWEST MINERAL INDUSTRY CONF., sponsored by Nevada, San Francisco & So. Cal. Secs. of A.I.M.E., Reno, Nev.
- April 19-20, 1957—G.S.A., Cordilleran Sec., ann. mtg.; P.C. Br. of P.S. & the S.S.A. also meet at UCLA, Los Angeles, Calif.
- April 21-24, 1957—SYMPOSIUM ON ROCK MECHANICS, 2nd Annual, Colo. School of Mines, Golden, Colo. Theme: Behavior of Material in Earth's Crust.
- April 29-May 1, 1957—AMERICAN GEOPHYSICAL UNION, 38th Annual Meeting, Washington, D. C.
- May 5-9, 1957—AMERICAN CERAMIC SOCIETY, 59th Ann. Mtg., Statler Hilton Hotel, Dallas, Tex.
- May 6-8, 1957—INSTITUTE ON LAKE SUPERIOR GEOLOGY, 3rd Annual Meeting, Kellogg Center, Michigan State Univ., East Lansing, Mich.
- May 7, 1957—INTERNATIONAL HYDROGRAPHIC CONF., Seventh Congress, Monte Carlo, Monaco.
- May 10-11, 1957—G.S.A., ROCKY MTN. SECT., 10th Annual Meeting, Logan, Utah. For information write to Sec'y. of the Sect., Gordon S. Wise, P.O. Box 58, Salt Lake City.
- May 16-18, 1957—G.S.A., SOUTHEASTERN SECTION, Morgantown, W. Va.
- 1957-58—INTERNATIONAL GEOPHYSICAL YR.
- July 10-19, 1957—INTERNATIONAL UNION OF CRYSTALLOGRAPHY, 4th General Assembly & International Congress, McGill Univ., Montreal, Quebec.
- August, 1957—INTERNAT. ASSOC. OF SEISMOLOGY & Physics of the Earth's Interior, Toronto, Ont.
- August, 1957—INTERNATIONAL ASSOC. OF PHYSICAL OCEANOGRAPHY, General Assembly, Canada.
- Sept. 3-14, 1957—INTERNAT. UNION OF GEODESY & GEOPHYSICS, 11th Gen. Assembly, Toronto, Canada. Add: Dr. J. A. Jacobs, 49 St. George St., Toronto, Ont., Canada.
- Sept. 9-10, 1957—AMER. CERAMIC SOC., Basic Sciences Div., State U. of N.Y. Coll. of Ceramics, Alfred Univ., Alfred, N.Y.
- Sept. 20-27, 1957—FIFTH CONGRESS OF INQUA, Madrid, Spain. For information write: L. Sole Sabaris, Instituto Geológico, Universidad Barcelona, Spain.
- Oct. 17-19, 1957—FOUR CORNERS GEOLOGICAL SOC. FIELD CONFERENCE, 2nd, Gallup, New Mex. For information write P. O. Box 615, Albuquerque, N. M.
- 1960—XXIST INTERNATIONAL GEOLOGICAL CONGRESS, Copenhagen, Denmark. Field excursions to Scandinavian countries.

## AMERICAN GEOLOGICAL INSTITUTE

### Spring Meeting Schedule

St. Louis, Missouri

AAPG-SEPM

Jefferson Hotel

### Sunday, March 31

- 4:00 P.M. BOY SCOUT COMMITTEE, with AAPG Boy Scout Committee.
- 8:00 P.M. GOVERNMENT RELATIONS COMMITTEE, with AAPG National Responsibilities Committee, Room 4.

### Monday, April 1

- 9:30 A.M. EXECUTIVE COMMITTEE, Room 2.
- 10:00 A.M. GLOSSARY COMMITTEE, Room 6.
- 2:00 P.M. PROFESSIONAL RELATIONS, Room 2.
- 2:00 P.M. PUBLIC EDUCATION, Room 3.

### Tuesday, April 2

- 2:00 P.M. PUBLIC RELATIONS, Room 6.
- Wednesday, April 3

- 9:30 A.M. BOARD OF DIRECTORS, Room 4.
- 2:00 P.M. Board reconvenes.

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# This Month in GEOTIMES



Successor to the Geological Newsletter

Published by THE AMERICAN GEOLOGICAL INSTITUTE

Robert C. Stephenson,  
EDITOR

Kathryn Lohman  
CIRCULATION MANAGER

Vol 1, No. 9

March 1957

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# *A Mineral Research Institute*

"Exploration has, for the most part, been the mining industry's business, but basic research has been no one's special responsibility." So states the summary report of the Advisory Committee on Minerals Research to the National Science Foundation, which appeared in print late in 1956 (see Books, p. 18), and which should be studied by all geoscientists. Those who have their own opinions on mineral research, or the lack thereof, are quite likely to take issue with the group of eminently qualified scientists who worked under the leadership of Dr. James Boyd to prepare this report. It is unlikely, however, that they will dispute the need for fundamental research into ore occurrence and genesis and into ore-finding techniques.

The areas of scientific knowledge involved in the problem were broken into three. Subcommittees on geological, geochemical and geophysical research were charged with delineating broadly the status of knowledge and the need for research in each of these areas. If the study is to serve no other purpose, it is certain to guide researchers who turn their energies toward research on mineral deposits.

The committee proposed that a mineral research institute be formed, financed principally by the mining industry and other private funds, aided possibly by "seed" money from the NSF. It was generally agreed that the institute should start as a research contracting agency, similar to the API, but that an independent functional mineral research laboratory is ultimately desirable.

The plan was presented to the mining industry late in 1956. After a few weeks of study, representatives of more than thirty companies convened once again for discussion and a consideration of ways and means. To those economic geologists who have slogged along the difficult paths of basic research with little or no encouragement from the American mining industry, there is good reason to doubt that industry will rush for the mineral research bandwagon. For the sake of our mineral future, however, it is to be hoped that these doubts are ill founded.



## OUR COVER

AGI President J. L. Gillson was the recipient of the D. C. Jackling award at the recent AIME meeting in recognition of his outstanding achievements in economic geology and for his service to the profession, see p. 10.

**THE AMERICAN GEOLOGICAL INSTITUTE** is a non-profit professional service organization established and managed by the scientific societies in the fields of geology and geophysics in cooperation with the National Academy of Sciences-National Research Council. It is the instrument of the profession serving and advancing the welfare of the geoscientist in matters relating to education, professional responsibilities and government relations. It is an active member of the Scientific Manpower Commission. It also functions in the stimulation of public education and awareness of the earth sciences, through career literature, the scouting program and other channels of communication.

**GEO TIMES** is the news magazine of the geological sciences. It reports on current events in the earth sciences, public education and public relations efforts throughout the profession, as well as appropriate legislative and governmental issues. It announces scholarships, fellowships, publications and new developments. It provides a forum for discussion of timely professional problems, and affords a common bond between the many specialized groups within the earth sciences.

# The Outlook for Manpower in Geoscience

by

CHESTER R. LONGWELL<sup>1</sup>

Able young people with adequate basic training in geology and geophysics are in short supply: this is a common verdict from those charged with finding acceptable candidates for essential jobs. We hear warnings that this situation may grow worse before we can expect a turn for the better. Educators, feeling a large responsibility in this matter, are concerned to find remedies; but attempts at analysis meet several baffling complexities, and a confident formula for improvement has not appeared. At least the problem calls for discussion, and *GEO TIMES* is a welcome medium for comparing views.

Commonly the subject of our inadequate manpower in several fields of science is coupled with assertions that Soviet Russia is fast outstripping us in the production of technologists. This approach can have merit insofar as it may shock us into recognizing real defects in our training programs. But a nation's scientific potential can not be reckoned merely by counting workers who have had some technical training. If high quality and effective organization are lacking, increasing numbers may become a liability rather than an asset. Our aim should be to attract into our field workers of first-class ability, in sufficient numbers to man the scientific, technologic, and educational programs as these continue to expand. Surely our first concern is not to equal or surpass the number of trainees credited to Soviet Russia or any other nation.

## SUPPLY OF RECRUITS

A first requirement for maintaining effective manpower in our field is a constant inflow of high-caliber recruits. A government like that of Soviet Russia can exert some control on students' choice of vocation by arbitrarily fixing high financial and other rewards for workers in favored fields. Our philosophy of free enterprise rules out such official favoritism and tries to insure freedom for young people in shaping their careers. But every experienced teacher can cite examples of students who discovered the fields of greatest appeal to them only near the end of their time in college. Geology and geophysics are unknown subjects to a large majority of students on entering college, because introductions to these fields are not included in the offerings of

most secondary schools, or at best receive only sketchy treatment in "General Science" courses. We can point to a few successful courses in geology, conducted by devoted teachers in secondary schools, which have led able young people to make geology their major subject in college. But such examples are exceptional, and generally in this country our field of science is at a disadvantage in competition with others because it is not known to many young people in their formative years.

Some good starts have been made in programs designed to cultivate in young people a natural interest in the Earth—an interest that can be awakened long before high-school age. This matter has received considerable attention in the AGI, as revealed in many issues of the *Geological News Letter* and *GeoTimes*. Volunteer workers have found the members of Boy Scout troops highly receptive to information on rocks, minerals, and geologic features generally. Employees of the National Park Service are finding that explanations of local geology presented through newspapers or on TV are received with much approval. A State University runs a summer Science Camp for superior high school students, with geology in a prominent role. A few State Geological Surveys are giving increased attention to public instruction by issuing press releases on geologic matters of general interest, holding field conferences for science teachers, and sponsoring

<sup>1</sup> CHESTER R. LONGWELL needs no introduction to most geoscientists for, as co-author of one of the most widely used texts in elementary geology, his name is soon known to most students. Dr. Longwell retired in 1955 after an outstanding career as professor of geology at Yale. He is now living in Menlo Park, Calif., and continuing field studies in the Basin and Range Province of Nevada. Dr. Longwell is a past-president of the AGI.

field excursions for high-school students. If such activities could become a regular part of the Survey program in most of our 48 States, the practical value and inherent interest of Earth Science would come to be widely appreciated. Assumption of such a role by State Surveys would assure a continuity in this kind of public education which cannot be supplied by sporadic efforts of volunteer workers. The Surveys would greatly improve their own public standing by such a program, well planned and executed; and they could in this way make one of the greatest conceivable contributions to geologic education.

One college that prepares students for professional work in mineral industries devotes an issue of its monthly magazine to an outline of opportunities in that important field, with an explanation of each kind of engineering or other specialist position for which the college offers training. This brochure, well illustrated, should be an effective aid to some high-school students who are giving thought to training for professional careers. Earth-science departments in other schools should consider following this lead. Do they spurn such action as futile and undignified advertising? It is a possible way of supplying information in a critical area of our educational program, with benefit to our whole field of science as well as to individual schools.

Far too many young people, in the critical period of choice, lack the basic information they need for electing fields of work in which they can be most useful and contented. We can expect to get our proper share of the ablest recruits only by letting young people know what our science is about and what opportunities it offers for a satisfying life work.

#### HIGH SCHOOL INSTRUCTION

Recent agitation in many parts of the country to introduce geology into public high schools has had very limited success. Several opposing arguments are urged: (1) the list of subjects offered already is too large; (2) teachers familiar with the subject are not available; (3) geology is too difficult for high-school level—it is properly a college subject; (4) the "more basic sciences"—physics, chemistry, and biology—should come first, and it is increasingly difficult to keep competent teachers even for these subjects.

Some of these points are arguable, of course. The number of subjects taught in secondary schools has indeed grown large; but are all those now on the approved list more important than geology?

*continued on page 14*

## INDUSTRIAL ASSOCIATES

The AGI roster of Industrial Associates received five significant newcomers in recent weeks when the American Metal Co., Ltd., Anaconda Company, Cyprus Mines Corporation, Phelps Dodge Corporation and the Texas Gulf Sulphur Company pledged support of the Institute through this program. These companies take their places along with the 13 oil companies already enrolled as Industrial Associates. The Shell Oil Company became an Industrial Associate in December, 1956. The companies now enrolled are:

*Amerada Petroleum Corporation*

*American Metal Co., Ltd.*

*Anaconda Company*

*Arabian American Oil Company*

*Arkansas Fuel Oil Corporation*

*Creole Petroleum Corporation*

*Cyprus Mines Corporation*

*Gulf Oil Corporation*

*Phelps Dodge Corporation*

*Phillips Petroleum Company*

*Shell Oil Company*

*Socony-Mobil-Oil Co.*

*Sohio Petroleum Company*

*Standard Oil Company of California*

*Standard Oil Company of New Jersey*

*Texas Gulf Producing Company*

*Texas Gulf Sulphur Company*

One of the associates prefers to remain anonymous.

With the profession assuming the basic financing of the Institute, the annual contributions of the Industrial Associates can in large measure be ear-marked for career guidance efforts, public education activities, student relations and other similar activities which can be mutually beneficial to the profession and to those companies concerned with our non-renewable resources—petroleum and minerals.

Two members of the Finance Committee of the American Geological Institute are concerned primarily with the Industrial Associate roster. They are, for mining, Francis Cameron, Vice President, St. Joseph Lead Co., 250 Park Ave., New York 17, N. Y., and, for petroleum, E. A. Koester, 604 Orpheum Bldg., Wichita, Kansas. Companies interested in the Industrial Association Program may contact either of these men or write directly to the American Geological Institute.



# John F. Carll

Pioneer Petroleum  
Geologist and Engineer

by  
WILLIAM S. LYITLE<sup>1</sup>

"The geology of petroleum was virtually created by John Franklin Carll." So said J. Peter Lesley, Head of the Second Geological Survey of Pennsylvania, under whom Carll, as Pennsylvania's first geologist in charge of petroleum and natural gas surveys, compiled and organized the available data on the geology of the Pennsylvania oil regions. Although Carll didn't postulate the first theories on oil and gas accumulation, he contributed more to the total oil and gas industry through his seven reports, while working for the Pennsylvania Geological Survey, than any man before him. The petroleum industry did not fully realize the importance of some of his observations for many years.

Carll's reports are the results of conscientious investigation and scientific description. They cover the geology of the oil regions of Warren, McKean, Venango, Clarion and Butler Counties, Pennsylvania. They also include surveys of the Garland and Panama conglomerates in Warren and Crawford Counties in Pennsylvania and in Chautauqua County, New York. In them Carll described oil rigs, tools, equipment, drilling and producing methods and discussed both the pre-glacial and post-glacial drainage of Erie County. His surveys went a long way toward dispelling many popular fallacies of the day.

#### STUDIED CIVIL ENGINEERING

He was born May 7, 1828, son of John and Margaret Walters Carll, of Bushwick, N. Y., now a part of the Borough of Brooklyn. He acquired a basic liberal education at Union Hill Academy in Jamaica, Long Island, and afterward studied civil engineering. He farmed with his father for three years, prior to entering the publishing field at age 21 as assistant editor of the Daily Eagle in Newark, N. J. Four years later he disposed of his newspaper interest and returned to Flushing, N. Y., where he practiced surveying and civil engineering until 1861.

<sup>1</sup> WILLIAM S. LYITLE is Chief of Oil and Gas Studies, Pennsylvania Topographic and Geologic Survey, Butler, Pa., Field Office. Lytle, son of an oil operator in the Pennsylvania Middle District, graduated from Penn State in Petroleum Engineering in 1940. After leaving the service in 1945 he joined the Survey staff. He holds a Reserve Commission in the Army, is married, has three children and has been active in scouting. He has been interested in biographical data on John F. Carll for many years. The signature above is that of Carll.

He had married Hannah H. Burtis of South Oyster Bay, L. I., in 1853 and they were the parents of two children. Mrs. Carll died in 1859, as did both children soon after. In 1861 he began the business of manufacturing wire, but loss was heaped on his family tragedies, for the wire works was destroyed by fire in 1864.

#### MOVED TO PENNSYLVANIA

He decided to try his luck in the Pennsylvania oil region and located the following year in Pleasantville, Venango County to become involved in oil production. During the next nine years Carll followed the oil industry, making careful observations of the different strata of rock that were penetrated by the drill in the search for oil and collecting records of a great number of wells. In 1868 Carll became a member of a committee formed at Pleasantville, supported by private subscription, organized for the threefold purpose of making the first systematic attempt to ascertain the direction and dip of the oil sands of the Venango oil regions, determining the true relation which the oil producing formation of one district bears to that of another, and making an accurate topographical survey of this region.

Because of Carll's accurate knowledge of the various geological formations and his habit of close observation, he soon achieved a widespread reputation as a geologist. His opinion and advice upon oil prospects were eagerly sought by oil producers. He invented a static pressure sand-pump, a removable pump chamber

## BSA Geology Month

October 1957

Geology month for the Boy Scouts—October 1957—is beginning to catch fire, due to the very effective fire-building and priming of Chalmer Cooper and Frank Gouin, heads of the AGI and AAPG Boy Scout Committees, their committees, and their effective liaison with the national offices of the BSA. Local geological societies, college departments of geology, student groups, state geological surveys and individuals can throw oil on the fire with their voluntary enthusiastic support or they can kill a golden opportunity with a wet blanket of no response.

Dan Turner, Chairman, Education Committee, Rocky Mountain Association of Geologists, has written Chalmer Cooper pledging support, not only locally, but also on the national level. Certainly there will be an excellent opportunity for local societies to serve their community by aiding in the Geology Month. Many of the state geological surveys have indicated their interest in participating in the program and aiding the geologists of their states who will be participating.

Departments of Geology and Geophysics throughout the country can follow the lead of Eddie Tullis at South Dakota Tech where his department has volunteered to work with the local Boy Scout Council.

and an adjustable sleeve for piston rods.

### JOINED PENNSYLVANIA SURVEY

The Second Geological Survey of Pennsylvania was established in 1874 with J. Peter Lesley as State Geologist. Lesley recognized that the petroleum industry afforded opportunities for the study of geological formations, such as never had been previously known. So it was that on July 1, 1874, he appointed Carll assistant geologist in charge of petroleum and natural gas surveys. Carll's engineering education and practical oil field experience qualified him well for the position, so he was destined to spend the rest of his life working as a petroleum geologist.

Very early in his career as a geologist Carll recognized the importance of keeping a good driller's log. All through his work on the Survey he attempted to drive home this point by talking to the producers and passing out forms to be used in keeping the well log. The volume of Pennsylvania oil well records as collected and published by Carll was an im-



It is visualized that student geology clubs can make a real contribution, particularly in parts of the country where professional geologists are few.

Indications are that the professional geoscientists may be outdone in enthusiasm and effort by hobbyists and other laymen who make up the membership of the many amateur science and mineral clubs throughout the country. These people have a zest for the earth sciences often lacking among the professionals.

The AAPG-AGI scouting committees are working with the BSA to develop the "geology kit" which will provide the nucleus for the Geology Month activities. The American Petroleum Institute is providing financial assistance in the preparation and distribution of this kit (GEO TIMES; Jan. '57, p. 9; Feb. '57, p. 13).

If you or your group are prepared to aid your local BSA Area Council in planning the Geology Month activities, you are urged to advise Chalmer Cooper at once. Address: U. S. Geological Survey, Washington 25, D. C.

October 1957—Geology Month for BSA—offers geoscientists a rare opportunity to meet the public. Don't flub the chance by sitting idly on the lazy-bench.

portant contribution to early petroleum geology for it furnished later geologists with precise and abundant information as well as being valuable to the oil producer. He ran numerous levels to establish well elevations which were published with the records. He described the method of collecting drill cuttings and the use that could be made of them. Under his supervision his assistant collected drill cuttings from 6 wells in Butler County and 3 wells in Clarion County. These cuttings were described, plotted and used for correlation purposes. There is a strip log on file in Pennsylvania Geological Survey which was plotted by Carll about 1875 and is probably the earliest example of such a log. He used strip logs in the same manner as they are used today for correlation purposes and to graphically show the thinning and thickening of the beds. Short sections of these strip logs are published in Carll's Second Survey reports.

*continued on page 14*

## AIME INVADES SOUTH

Business and pleasure can be successfully mixed as was conclusively proved in New Orleans, February 24-28 when the American Institute of Mining, Metallurgical and Petroleum Engineers filled the hotels to overflowing at their Annual Meeting. Geologists and geophysicists may not have dominated the technical sessions at the AIME meeting, but they were experienced men-about-town as a result of recent meetings in New Orleans (GSA, 1955 and SEG, 1956) and much in demand to lead exploration parties into the gas-light jungles in the dead of night.

The Petroleum Branch offered a wide range of papers of interest to geoscientists, particularly in the area of economics. In one interesting paper on petroleum investments, F. G. Coqueron and J. E. Pogue of the Chase Bank indicated that American companies, in the ten year interval following World War II, spent \$56 billion for replacing and expanding facilities. Of this, 68 per cent was spent in the U. S. and 32 per cent in foreign areas. This vast capital outlay was distributed as follows: production 59 per cent, transportation 13 per cent and marketing 12 per cent. They presented other interesting and meaningful statistics on the petroleum industry of the Free World and pointed out the importance of the petroleum industry in international relations.

Dr. R. J. Gonzales, of the Humble Oil & Refining Co., in a paper on the effects of imports and taxation of domestic oil production, pointed out that a reasonable volume of imports serves to stimulate efficiency in domestic operations, but an undue volume of imports can damage our domestic production picture. On taxation, he pointed out that the existing rate of depletion comes close to measuring the capital value of oil in the ground, while a lower rate would not protect the true capital value from taxation as ordinary income. He further stated, "In a period when the United States is spending \$40 billion annually on defense, it would be foolish to jeopardize the domestic supply of the energy (petroleum) most vital to that defense by unwise policies (on taxation and imports)."

AGI's President J. L. Gillson received the Daniel C. Jackling Award for "his significant contributions to the advancement of economic geology, his leadership, and his keen sense of professional responsibility." Dr. Gillson, Chief Geologist of E. I. du Pont de Nemours and Com-

pany, is a Vice President and Director of the AIME and is active in many geological societies. As a leader among the scientists concerned with industrial minerals and the coordinating editor of the revision of AIME's "Industrial Minerals and Rocks," it was most appropriate that Dr. Gillson's Jackling lecture should relate to industrial minerals. For mining people who look at the mining industry through "metal-rimmed" glasses he provided food for thought. In 1953 he pointed out that production of the industrial (non-metallic) minerals aggregated well over \$2 billion dollars, whereas the production of metallic ores was valued at only \$1.4 billion. He made this pungent observation ". . . The non-metallic industry commands respect in the measure we all understand—the almighty dollar." He pointed to the need for the geologist working with industrial minerals to understand beneficiation of minerals, something of chemical engineering and the importance of mineral economics. To meet the demands for such broad knowledge, Dr. Gillson cited the need for attention to such areas of training in the academic preparation of our young geologists.

Another geologist who drew attention at the meeting was attractive, friendly Mrs. Pauline Moyer who invaded a man's world by serving as chairman of an Industrial Minerals Division technical session. Pauline has won the respect of the profession through her able work alongside her geologist husband, Lou Moyer, as a consultant in industrial minerals. Dr. T. S. Lovering, who heads the Geochemical Exploration Section of the U.S.G.S., gave a most interesting paper on the frontiers of geochemical prospecting.

The meeting place was New Orleans and, after all, there was a lot more to do in New Orleans than to listen to gaseous technical emanations. During the day there was not much time available to join the attending wives who were off on sight-seeing tours to Versailles Oaks, Pirate's Alley and other intriguing spots. At night, however, things were different. Stodgy scientists and engineers emerged from their technical session-cocoons and permitted themselves to be caught up in the carnival atmosphere of the Mardi Gras. More than one found his way to famed Bourbon Street where hours could be spent evaluating favorable structures and cogitating on exploration. The highlight of the scheduled AIME entertainment was the dinner-dance aboard the Mississippi

## AAPG-SEPM — ST. LOUIS — APRIL 1-4

If you have thirst for geologic knowledge, for the sake of the knowledge itself, or for the purpose of getting ahead, then pack your bag, grab a plane or train and get to St. Louis for the AAPG-SEPM meeting, St. Louis, April 1-4. The theme of this big annual meeting of the oil finders is *New Methods and Principles in Petroleum Geology*.

If one but reads the titles and abstracts of papers to be presented at this meeting, he will be impressed with the reports of exciting frontiers of geologic knowledge that have developed in recent years as the result of accelerated and intensified basic research. Up for discussion are intriguing and challenging subjects such as: . . . Where does oil come from? . . . Is "creekology" valuable? . . . Summary of studies of recent sedimentation, ecology, etc. in the Gulf of Mexico . . . New Geophysical Tools . . . How old is the earth? Exploratory achievements of 1956. . . . And, the complex problems of training the modern petroleum geologist. Dr. Parke A. Dickey of Carter Research is chairman of the technical program.

### HOOVER SPEAKS

Herbert Hoover, Jr., who recently returned to private life after ably serving our country as Under Secretary of State, is scheduled to appear as guest speaker of the convocation.

Listed elsewhere in this issue is a schedule of committee meetings of the American Geological Institute. The Board of Directors of the Institute and Executive Committee are also scheduled to meet.

The Society of Economic Paleontologists & Mineralogists will make awards to William R. Walton, Gulf Research & Development Co., Pittsburgh, Pa., and to Louis F. Dellwig, University of Kansas, Lawrence, Kansas, for their scientific papers selected as outstanding among the

riverboat, S. S. President.

Freeport Sulphur Co.'s Ray Feierabend did an excellent job in planning the field trips. Two excursions, replete with barbecue, were run to the Grand Ecaillie Sulphur operations of Freeport. On Thursday, when many were leaving for home, one group was loaded in buses and taken to the salt mines—not in Siberia, and, believe it or not, they went voluntarily. The trip visited the Avery Island operation of the International Salt Mine.

papers published in the journals of SEPM. Professor Philip H. Keunan, distinguished Dutch geologist, who has made many important contributions to knowledge of sediments has been elected a correspondent of SEPM. Henry V. Howe, Professor of Geology, Louisiana State University, has been elected an honorary member.

### EMPLOYMENT BUREAU

The AAPG will again sponsor employment interview facilities which have in the past few years proven so successful in bringing job-seeking geologists—particularly students—together with prospective employers. At Kiel Auditorium, according to R. C. Pattison, Chairman of the service, private interview booths will be available March 31 through April 4, and a staff of attendants will be on hand to arrange interviews. In Chicago in 1956, 1507 interviews were provided for 251 registrants from 31 states. All interviews are held in strict confidence so that a man seeking a change in employment can utilize the service without misgivings.

### NEW OFFICERS

Taking office at the close of the annual meeting of the AAPG-SEPM are the following:

#### AAPG

Graham B. Moody, *President*

Theodore A. Link, *Past President*

Byron W. Beebe, *Vice President*

William J. Hilsenbeck, *Secretary-Treasurer*

Sherman A. Wengard, *Editor*

#### SEPM

Richard V. Hollingsworth, *President*

Robert R. Schrock, *Past President*

Stuart A. Levinson, *Vice President*

Samuel P. Ellison, Jr., *Secretary-Treasurer*

M. L. Thompson, *Editor, Journal of Paleontology*

Jack L. Hough, *Editor, Journal of Sedimentary Petrology*

Undergraduate and graduate science students in U. S. and Canadian educational institutions are eligible to compete for the Ida and Henry Schuman Prize, awarded annually under auspices of the History of Science Society in the amount of \$250 for an original essay on the history of science and its cultural influences. Further information may be obtained by writing Professor Harry Wolf, Department of History, University of Washington, Seattle 5, Wash.



## Persons armed with data REPORT TO AGI

The American Geological Institute is engaged in a nation-wide hunt for widely sought-after information. You can be an AGI agent and track down these data. When the captured data are submitted to the AGI, the successful agent will be rewarded. The reward . . . the satisfaction that comes from having contributed information to aid others.

### SUMMER EMPLOYMENT

To get the most out of college training, students must have the opportunity to see geoscientists and the geoscience in action. Must our geology-geophysics majors run Good Humor trucks . . . be bus boys at resort hotels, while non-technical persons are hired for rod-men, drillers' helpers, etc., during the summer months? With the added advantage of summer experience during student years, that young chap may some day find a new ore body or find a new oil field for your company.

Companies, geological surveys, and others who may have openings for summer employment for geology-geophysics majors are asked to write AGI, so that we, in turn, may circularize the departments of geology in the colleges and universities. This requires prompt action. Write AGI today.

### PLACEMENT OF HUNGARIAN REFUGEES

AGI is cooperating with the National Academy of Sciences and the International Rescue Committee in trying to place refugee earth scientists in U. S. positions. There are only a handful coming into our country for whom we feel directly responsible. Following are three who currently need jobs: *Geza Kisvarsanyi*, 30, married, no children, mining geologist (Fe, Mn, Pb, Zn, Sb, Co, Ni, Cu) and teacher of mineralogy and petrology; *Lasz Halasz*, 26, single, geophysicist (mining, hydrology, theoretical); *Leslie M. Hammel*, 45, married, no children, coal economist and executive.

If your company has interest in aiding refugee geoscientists please write or call the AGI. We can give you more details on the above men and alert you to others who may be coming in.

### TEACHING AIDS

The American Geological Institute has many requests for information on teaching aids in the geosciences. . . . In connection with our educational program a manual of teaching aids has been proposed. One great need for such data is for use in the National Science Foundation-sponsored teachers institutes being conducted in colleges throughout the U. S.

Teaching aids and sources of such data received by the AGI will be catalogued and turned over to our Public Education Committee and will be organized for publishing and distribution.

### MOVIES

Mrs. Helen Fleisher, AGI career correspondent, and Mark Pangborn of the U.S.G.S. are compiling a list of movies about the geosciences, mining and petroleum. This list will be used in our scouting program, our public education effort and made available for use of local societies, student groups, etc.

Please advise the AGI if your company or organization has a geoscience movie, state its title and give pertinent ordering instructions. Perhaps you know of a film loan or rental service which has proven particularly helpful in providing appropriate films. Write your AGI.

### PUBLIC RELATIONS

AGI hopes soon to provide a national news release service on geoscience news, but as yet we are not up to the burden of organizing and conducting such an activity.

Local societies make news that the profession should know about—so do colleges, and sometimes companies. Activities such as these should be brought to Bob Bates' attention. You can address him c/o Department of Geology, Ohio State University. If your group has brought *Geology into the Public Eye* let Bob know.



# MANPOWER in a column -

By HOWARD A. MEYERHOFF  
*Scientific Manpower Commission*

The military manpower situation presents an elusive series of problems, and at times one gets the impression that the Department of the Army has a corps of specialists who sit up nights creating new ones.

The Selective Service System has become fully aware of the importance of scientists and engineers in every phase of national security and welfare. The Legislative and Executive branches of the government have also become concerned about assuring an adequate supply and an ample flow of highly skilled personnel into the nation's working force. The Reserve Forces Act of 1955 was specifically designed by the Administration and the Congress to enable essential technologists of military age to complete their military obligation in six months so that the national economy would suffer the loss of their services for the shortest possible period of time. Only the Department of Defense, and especially the Department of the Army, although preoccupied with technological equipment, fails to see the relationship between technology and technologists of military age.

This indictment rests upon several points:

1) The Scientific and Professional Personnel Program, ostensibly designed to utilize the training of scientists and engineers, has insistently hampered itself by requiring that all men in the program spend 30-40 percent of their time on military detail, to the detriment of the research and development to which they are assigned.

2) The Army regulation covering early release of men whose services are needed in the interests of national health, safety, and welfare has become a farce. Of 315 applications received since last May 1, only 15 have been granted. There is little or no evidence that serious consideration was given to the national welfare.

3) The Department of Defense has negated the spirit and letter of the Special Skills Reserve Program, for the men who complete their six months' training will be screened from the ready to the standby reserve on a mass basis—in the order of their remain-reserve obligation. The Department refuses to create machinery for the processing of individual cases.

4) The Army now proposes to open up

## ONE HUNDRED FOR AGI

### COMMITTEE OF ONE HUNDRED

Harold L. Alling	G. M. Knebel
Ira H. Cram	Frederic H. Lahee
Leander Dawson, Jr.	Royce R. Latimer
A. Rodger Denison	Morris M. Leighton
E. A. Eckhardt	A. I. Levorsen
W. E. Franks	L. F. McColm
J. L. Gillson	Eugene McDermott
Cecil H. Green	D. A. McGee
B. F. Hake	Arthur Montgomery
K. C. Heald	T. J. O'Donnell
Hollis D. Hedberg	Wallace E. Pratt
William B. Heroy	R. O. Rhoades
Herbert Hoover, Jr.	Earle F. Taylor
J. S. Hudnall	J. W. Thomas
Meredith E. Johnson	Theron Wasson

The above had pledged membership to the Committee of One Hundred for AGI on or before February 22, 1957. This program, which was started in December 1956 by Dr. E. A. Eckhardt, has been described in earlier issues of *GEO TIMES*.

There is strong incentive for the profession to put the drive for the Committee of One Hundred over the top, for the National Science Foundation has made a grant of \$20,000 to the Institute for meeting 1956-57 expenses provided the profession matches this \$20,000 dollar-for-dollar in new income. If the Committee of One Hundred attains its goal of \$10,000, these funds, together with other new money from various sources, will assure AGIs claiming the full \$20,000 of the NSF Grant.

Persons desiring to enroll in the Committee of One Hundred, which entails a pledge of \$100 per year to the AGI for five years, may receive a pledge form by writing the American Geological Institute, 2101 Constitution Ave., N.W., Washington 25, D.C. Contributions to AGI are tax-deductible.

the six months' training program to everyone between the ages of 18½ and 26. Many of the 1,500,000 men in the military manpower pool will thus move from the jurisdiction of Selective Service into the direct control of the military, where selection has no place and whence, so far as we can see, common sense has fled. We echo the immortal words of the sergeant who roared at a baffled enlisted man: "It doesn't have to make sense—it's regulations!"

"How to Handle Women and Explosives," is the title of an interesting and entertaining 17-minute safety movie "for powder men only" available without charge from Explosives Development Section, Atlas Powder Co., Wilmington 99, Del.

#### **CARLL, continued from page 9**

Carll's theory on the formation of the Venango oil sands has been substantiated by later work. In 1874 he made general structure map for the district near Titusville, Pennsylvania, which showed the absence of any relation between structure and oil accumulation. He recognized clearly that the localization of the pools was determined by the physical characteristics of the sand. Carll spoke of the Cashup pool as a sealed reservoir. He confirmed the theory that the sands lie in lens-shaped masses and not in continuous belts.

#### **ENERGY CONCEPT**

Carll's third Survey report (1880) was one of the first publications putting forth the energy concept in the occurrence of oil and gas. He saw the role that gas played in the movement of the oil to the well bore and realized that gas should be conserved in order to produce the maximum amount of oil. He also explained that oil did not occur in an underground lake or pool in the producing formation, but in the pores of a sandstone. He showed that the normal porosity of sandstone was great enough to account for the most productive wells discovered up until that time. He also made some interesting calculations as to the capacity of formations that produce gas, in particular, the Murraysville sandstone of Pennsylvania. In this same report Carll suggested that water flooding might be the answer to obtaining a larger amount of oil from the rock than by any other method. He thought that some system might be devised by which water could be let down through certain shafts and the oil forced towards certain other shafts where the pumps were kept in motion, and the rocks thus be completely voided of oil and left full of water. Over forty years later this secondary recovery method was commenced and is used extensively today.

His second marriage was in 1868 to Martha Tappan of Newark, N. J. A son, Samuel, was born to them. Carll was elected a member of the American Philosophical Society in Oct. 15, 1875. He resigned from the Survey in 1888 to engage in private practice as a consulting geologist. He remained in Pleasantville from which point he made various trips into West Virginia and the fields of the Southwest in the interest of several of the major oil companies. He died in 1904 in Waldron, Arkansas, and is buried in

the family plot in the Flushing, Long Island, cemetery.

The present day geologist often refers to Carll's reports for data on the early oil industry. His contributions are not only a description of facts, but a statement of the principles established by them regarding the origin, location, abundance, and character of Pennsylvania's petroleum deposits and of the history and methods of their exploitation. The modern petroleum geologist owes much to John F. Carll for the techniques and theories which aided greatly in establishing the role of the geologist in petroleum exploration.

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#### **LONGWELL, continued from page 7**

All the sciences have difficult aspects, and in many respects geology is as elementary as any because its exhibits are always before our eyes. Some knowledge of physics, chemistry, and biology is, of course, basic for any full understanding of geology; but in introductory high-school studies many principles of the three "basic" sciences are most convincingly illustrated by geologic phenomena. Habits of accurate observation, fundamental in all scientific study, are acquired early by young people who have their interest in outdoor things thoroughly aroused.

But the dearth of competent teachers gives us pause. If geology were generally admitted to high-school programs now, in most of the schools it would be turned over to teachers who have little if any training in the subject. Even with good textbooks designed for the secondary-school level, such an arrangement could not be satisfactory. Many of us recall that physical geography was widely taught in this way until in the 1920's it was generally dropped as a high-school subject. We should not agitate for wholesale offering of geology in high schools of a State without regard for provision of teachers. Good courses are being introduced locally, through efforts of teachers familiar with some branch of earth science or under the guidance of local citizens. We may be sure the pressure for such courses will increase, as young people with wakening interest in the physical world around them swell the demand. Meanwhile we must use all available agencies for acquainting young people with our science and the opportunities it offers them for careers.

#### **COLLEGE PROGRAMS**

Students who enter college with their minds made up on their major subjects

of study are particularly fortunate. Outstanding in my memory is one who, at the start of his freshman year, came to me for advice on details of his program. Before completing high school he had decided to master a particular branch of geology; and he came to me with a written outline of courses for each of his four years in college and three years in graduate study. This program, with minor changes, he carried through; and his career has been successful and satisfying. Undergraduates who have planned so carefully are highly exceptional, but they point the advantages of having early information on which ideas of suitable careers can be based. Illustrations of this important matter are more often in reverse; a student enters college with no real ideas about what he wants to do, takes courses on trial, and perhaps as late as junior year stumbles on the subject he likes best. This is no general indictment of students who delay a final choice, perhaps because of difficulty in deciding among fields they find attractive. Many college programs are, of course, completed successfully after final decisions on major subjects are made in sophomore year. But those who can start fairly definite plans before they enter college have a large advantage. Analysis leads us back, then, to the most urgent need in our educational program: we must make ourselves better known to the potential recruits.

#### AID FROM INDUSTRY

Industrial groups, notably some of the large petroleum companies, have provided opportunities in our science by establishing excellent laboratories for research, by setting up generous fellowships for graduate study, and by financing field studies of students working for advanced degrees. These moves are not merely altruistic; industrialists realize that continued development in their fields require the training of technical personnel and the advance of scientific knowledge. A promising new service in which smaller industries participate is announced by McGee and MacVicar (*GEO TIMES*, Nov., 1956). The Frontiers of Science Foundation will serve to acquaint the people of Oklahoma with matters of interest in science, and should help create a popular understanding of the scientific disciplines, including geology and geophysics. Let us wish his new Foundation success in its mission; and may it become a pattern for similar services in other States to aid in attack on our educational problem "at the grassroots."



by  
Bob  
Bates

Remember Ricky Exner? His essay on "Dinosors" appeared in the December issue, opposite a paragraph in this column about Richard M. Nelson, science teacher of the year. A reader in Berkeley, Calif., suggests that a meeting between Ricky and Richard might be—shall we say—mutually illuminating. Perhaps a philanthropic foundation might be willing to arrange this.

Now to more explosive issues. That January column criticizing highway markers has provoked four replies. One is pro, one merely informative, and two are strongly anti. Gail Carpenter of Wichita agrees that the Devil's Slide marker in Utah is an example of geologists talking to themselves rather than to the public, although he commends the attractive and permanent nature of the marker. Sam Frazier of Ardmore says that those formation-name signs in Wind River Canyon were erected by the Worland Petroleum Club, with the intention of informing only the travelling geologist. More elaborate signs at the ends of the canyon were planned but never put up.

Tom L. Coleman of Oklahoma City says "Highway geological markers are for geologists," and cites the excellent series erected by the Ardmore Lions Club under the guidance of C. W. Tomlinson. "Nothing you can tell a shoe-store man on a highway marker," Coleman is convinced, "will do him any real good." K. H. Holmes of Worland seconds these remarks. The shoe-store man knows nothing of geology and therefore "it is impossible to give him a short course in historical geology on a few highway signs."

The point of the January column was that geological markers don't do much for the layman; and all the letters admit this. The critics argue a different point, namely that the signs don't inform the layman because they can't: he is un-informable. Either we talk to ourselves on highway signs, they say, or we keep our mouths shut. This attitude underestimates (1) the geologist's ability to write descriptions in brief, plain English, and (2) the layman's ability to understand them. It assumes that we are so specialized and ivory-tower that we have no basis whatever for communicating geologic aspects of scenery to the tourist. Alas! The poor shoe man!



## ROCK CHIPS

by SANDSTONE SAM

*A geologist fellow named Wurst  
Acquired an insatiable thirst  
As he fell into traps  
Refolding his maps  
In the way that they were at the first.*

\* \* \*

*Sam dear,*

*Regarding your comments on page 16  
of the GEOTIMES for January 1957, I  
wish to state that although I am a geolo-  
gist, I am no gentleman.*

*Ever yours,  
Rose Quartz*

\* \* \*

*Out in Kansas where the Geological Survey has a lot of public relations "moxie," maps, which depict differences in elevation by the use of contour lines drawn through points of equal elevation, are billed in a recent news release as "3-D Maps . . . to aid agriculture and industry."*



**REPORT OF THE ADVISORY COMMITTEE ON MINERAL RESEARCH**, 76 pp., 1956, available in limited quantity from the National Science Foundation, Washington 25, D. C.

This report to the NSF by an outstanding group of scientists on the needs for mineral research in the areas of geology, geochemistry and geophysics should be studied by all economic geologists and educators, as well as mining company executives. The record of our country with regard to basic research on mineral deposits has not been distinguished. This report can serve as a spring board for a program to stimulate such research. The geoscientists have a large and important responsibility to their profession and to the future security of our nation as they work shoulder to shoulder with industry in facing up to accelerated mineral research.

**THE GEOLOGY OF NEW HAMPSHIRE, PART II—BEDROCK GEOLOGY**, by Marland P. Billings, 203 pp., 1956, New Hampshire State Planning and Development Commission, Concord, N. H., \$3.50, map only \$2.00.

This report with the 1:250,000 scale bedrock geology map of N. H. by Professor Billings is a major contribution to the geologic literature of the State. The map was produced in cooperation with the USGS and is available separately.

## NEW Ideas Products Services

**Helicopter-borne geophysical equipment** has recently been put into operation by Aero Service Corporation, featuring three aerial exploration instruments—an electromagnetic detector, scintillation counter and magnetometer.



The EM gear is uniquely mounted fore and aft to permit greater maneuverability and safety; it has been developed in conjunction with the Neumont Mining Corporation. The equipment is sufficiently automatic that an operator is not required. More information on this Sikorsky-S5 helicopter-mounted geophysical equipment may be had by writing **Aero Service Corporation, Attn. R. Sohnen, 210 E. Courtland St., Philadelphia 20, Pa.**

**Tyrannosaurus** and **Brontosaurus** are two new bronze-finish dinosaur models being offered in museums. These were created by William Otto under the scientific supervision of E. H. Colbert. Otto is known for his Rancho La Brea models. Information on availability of these models may be had by writing **Mrs. Rachel H. Nichols, P.O. Box 14, Planetarium Station, New York 24, N. Y.**



**List of Publications** covering all publications of the SEG may be had free upon request from the **Society of Exploration Geophysicists, P.O. Box 1536, Tulsa 1, Oklahoma.**

**THE ORIGIN AND NATURE OF ORE DEPOSITS** by R. T. and W. J. Walker, 384 pp., 1956, Walker Associates, Box 1068, Colorado Springs, Colorado, \$6.50 in U. S.

This book takes a number of argument-provoking exceptions to generally held ideas concerning the genesis and occurrence of ores. This book should stimulate economic geologists to crystallize their own ideas on ore deposits. The closing chapter, "The Human Element," has some interesting ideas.

**CENTENNIAL REVIEW OF ARTS AND SCIENCE**, published quarterly by the College of Science and Arts, Michigan State University, 112 Morrill Hall, East Lansing, Michigan, \$3.00 per year.

A new periodical for persons with broad interests in the liberal arts. Presents articles on widely varying subjects relating to Arts and Science.



# LETTERS

DEAR EDITOR:

Don't let them tell you that *GEO TIMES* is not read. Since my ad appeared in the January issue, I have been flooded with applications for jobs listed.

E. A. KOESTER

*Editor's Note: We get the same response when we pull a boo-boo.*

DEAR EDITOR:

Since I am one of the knuckleheads who tries to write signs that will be understood by other knuckleheads, I was particularly interested in Mr. Bob Bates' remarks in *GEOLOGY IN THE PUBLIC EYE* which appeared in your January issue. I find this almost startling. It has been my experience that geologists are generally overly critical of the sort of "over-simplification" of geological processes which would be understood by the knuckleheads.

I like Mr. Bates' article so well that I would appreciate your permission to reproduce it so that I may pass it along to some of my colleagues who are also in the business of trying to express complexities to laymen.

Sincerely yours,  
C. KENNY DALE  
NPS, Park Naturalist

DEAR EDITOR:

Congratulations to you and your staff on the fine job being done on *GEO TIMES*. I am sure that I speak for all of your subscribers in this area when I say that your

news magazine has become an integral part of our monthly reading material (and Lord knows there is plenty). Keep up the good work!

Very truly yours,  
LLOYD A. HERSHY

DEAR EDITOR:

Mr. Maurice Kamen-Kaye's letter in the September *GEO TIMES* states that, in his opinion, the usage of the term "Paleocene" should be abandoned and combined with the Eocene. My experience is restricted to the United States, but I see many objections to using the name Eocene to cover beds of Paleocene age.

The Paleocene through much of the Rocky Mountain area consists of sands, dark shales, and coals, while the Eocene is made up of varicolored shales and silts, along with sands and lacustrine deposits. The Paleocene at many localities resembles the Cretaceous far more than the Eocene, and in some instances cannot be separated from the Cretaceous except by the use of fossils. For the most part, the Paleocene is considered to be a littoral deposit, while much of the Eocene is continental or lacustrine in origin.

I, for one, favor the retention of the Paleocene as an epoch in the geological time scale, otherwise we would have to be constantly qualifying beds of "Upper" and "Lower" Eocene age.

Very truly yours,  
E. B. HEYMUN

## POSITION OPEN ELECTRICAL OR ELECTRONICS ENGINEER

With the exploration subsidiary of KENNEDY COPPER CORPORATION. Permanent staff position to take charge of instrumentation in the field of mining geophysics. Mainly involves precision electrical measurements in audio and sub-audio frequency range for the detection of electrically conductive mineral deposits.

### Scope of Responsibilities

*Design and supervise construction of geophysical instruments*

*Improve and maintain existing geophysical instruments*

*Assist in interpretative studies of field measurements*

Graduate degree and/or design experience desirable. Based in Denver, Colorado. Some travel. Apply to Geophysics Division, 516 Acoma Street, Denver 4, Colorado, and include resume of education and experience.

## CLASSIFIED ADS . . .

	1 ti.	3 ti.	6 ti.	12 ti.	
POSITIONS WANTED	\$0.25	—	—	—	per line
VACANCIES	2.00	1.35	—	—	per line
SERVICE-SUPPLIES	2.00	1.35	—	—	per line
CONSULTANTS	2.00	1.35	—	—	per line
ONE INCH BOX	25.00	22.50	21.25	20.00	

Min. charge \$1.00. AGI box numbers \$1.00 extra. No discounts. All classified advertisers will be billed, do not send advanced payments. Address all communications to American Geological Institute, 2101 Constitution Ave., Wash. 25, D. C.

## POSITIONS WANTED

BOX 242. GEOLOGIST, 35, B.S., married, 5 years' major oil company experience in northern New Mexico and West Texas, including administrative, seismic and some surface work. Desires to relocate. Excellent references.

BOX 254. GEOLOGIST, Ph.D., specialist in Economic Geology, Petrology, Mineralogy, presently Visiting Professor, wants similar position for the academic year 1957-58, or permanent affiliation with a serious institution of learning. Experienced in teaching, widely travelled, familiar with geological literature and supporting sciences. Will also consider research or exploration. Excellent references. Available June 1957.

BOX 263. Paleontologist-stratigrapher, invertebrate and micropaleontology, 42, married, Ph.D., 16 years experience teaching, research, and with U. S. Government. Field experience throughout North America and western Europe. Over 40 publications. Phi Beta Kappa; Fellow, G.S.A.; A.A.P.G.; S.E.P.M.; G.S. London; G.S. France, etc. Desires teaching position in University with graduate program, or research with State Survey.

BOX 266. Geologist, 29, A.B. plus 1 year post grad. Chemistry minor. Experience in Cartography, Geophysics and Electrochemical engineering. At present head high school science department. Desires permanent position with industrial or oil company. Available in June.

BOX 267. Geologist-Geophysicist, 44, married, D.Phil. Geology. 8 years consulting, 7 years teaching, 3 years military geology, 1 year expedition. Extensive knowledge Latin America, Europe, Middle East. Fluent Spanish, Portuguese, French, German. At present Head of Dept. Desires teaching position or with consulting-investment-exploration group. Specialties Petrology, Structure, Economic and Engineering Geology, Photogeology, Gravity, Magnetic, Electrical.

BOX 268. SUBMARINE GEOLOGIST, 27, married, Ph.D. from Scripps Inst. Oceanography expected June. Scientific leader 4 Scripps expeditions 1953-57; studies of sea floor and igneous geology of islands. Publications on marine volcanism and underwater volcanic acoustics. Desires research or teaching position in marine geology USA or abroad. Available after April.

GEOPHYSICIST-GEOLOGIST, 30, B.S. Geology, married, 6 years geophysical experience with Oklahoma contract company. Desire geology or geology-geophysical position in petroleum or mining industry. Will relocate. Box 300, Shawnee, Oklahoma.

BOX 270. Paleontologist, Ph.D., 30, 4 years industrial experience, 2 years teaching experience at state university. Specialties geochemistry and paleoecology. Desires teaching position starting June or September, 1957.

BOX 271. Geologist, 26, single, vet., B.S.-1956, 1 yr. grad. 2 summers experience on Canadian Shield. Desires research or exploration position in petroleum or mining. Prefers Rocky Mt. district.

BOX 272. GEOLOGIST, Ph.D., five years petroleum experience, seeks teaching position with research opportunity.

BOX 273. GEOLOGIST, seven years surface, subsurface, and seismic experience, including coordinating, supervising, and evaluating active exploration program, seeks responsible position.

BOX 274. Geologist, 26, M.S. Veteran, married, available June 1, field experience, publications in stratigraphy, prefers job in western United States but will consider position anywhere in western hemisphere. Prompt and confidential reply to all inquiries.

BOX 275. Geologist, Ph.D., three years post-doctoral experience, wishes to fill nine-month teaching vacancy 1957-58.

UNIVERSITY STUDENT seeking Summer Employment in Pure or Applied Geochemistry, or in Geophysics as an alternative. Available for 5 months. Qualified for various geochemical tests and analysis. Experience in handling and operating a laboratory. Write: R. A. Javitch, 1589 McGregor St., Montreal 25, P.Q. Canada.

BOX 276. Geologist, 27, married, veteran, B.A. Canadian university, M.A. requirements Boston University Jan. 1957, no on-the-job experience but have had field geology courses, desires position with oil company in exploration and/or research.

BOX 277. GEOLOGIST, 26, married, B.S., 1 year graduate work, 1½ years major company experience. Desires paleontology work in western U. S. or foreign area. Salary of little importance. Published in mathematics. Working knowledge of physics. Military obligation completed.

BOX 278. Geologist, married, age 66; M.S., 30 years experience as Head of Department and teacher in the same college. Desire appointment on a temporary basis. Location anywhere. Prepared to teach physical geology, mineralogy, optical mineralogy, petrography of igneous, metamorphic and sedimentary rocks, and economic geology. Field experience in engineering geology in heavy construction and mining. Salary open. Retiring Aug. 1957; available after that date. Member of GSA; AAPG; SEPM.

BOX 279. EXPLORATION AND ADMINISTRATIVE GEOLOGIST, 30, A.B., A.M. in Geology, married, 5 years experience in valuation and development of minerals and petroleum properties. Numerous contacts in western mining circles. Familiar with organizational, financial and corporate problems common to the minerals industry. Excellent references. Available immediately. Will relocate.

GEOLOGIST, 28, 4 years combined geological drafting, geophysics, mapping and subsurface experience. Foreign service acceptable. Available June. A. Peter Olson, Box 2586, Fargo, North Dakota.

BOX 280. Geological employment desired. B.S. from U. of Wisconsin. 40 hrs. in geology. Married. 8-week summer field course only experience. Very willing to learn. Available March 15, 1957.

BOX 281. GEOLOGIST, 24, M.A. in June 1957. 3 summers geological experience. One year teaching experience. Desires teaching position in SMALL COLLEGE. Willing to teach Physical and Historical Geology plus semester courses in three of the following: Structural Geology, Sedimentation, Stratigraphy, Petrology, Economic Geology.

## VACANCIES

WANTED: Experienced field geologists and Tertiary Paleontologists for work in Panama. Knowledge of Spanish desirable. State full qualifications and expected salary. Replies confidential. Contact Edward A. Koester, 604 Orpheum Building, Wichita 2, Kansas.

ALLEGHENY COLLEGE, Meadville, Pennsylvania. Instructor or Assistant Professor of Geology to teach petrology, geomorphology or other courses to undergraduate majors and some geology in general education, beginning September. Master's degree essential, prefer doctorate in progress or completed. Apply to W. H. Parsons, Dept. of Geology.

VASSAR COLLEGE, Poughkeepsie, N. Y. Needed for Sept., 1957, a man or woman with A.M. or better, specializing in mineralogy and petrology. Write Dept. of Geology.

**RESEARCH COUNCIL OF ALBERTA** requires a geophysicist (or physicist) and 4 geologists for groundwater studies (B.A., B.Sc.). Initial salary \$4,400.00-\$5,000.00 per annum. Council also requires a sedimentationist or stratigrapher (M.Sc. or Ph.D.) to do research on the Alberta Tar Sands and a geologist (Ph.D.) to join Council's petroleum geochemistry section. The salaries for these two positions are dependent upon experience but in the scale \$6,000.00-\$7,000.00 per annum. Transcripts of academic records, names of 3 referees, record of experience and a recent photograph should be sent to: The Secretary, Research Council of Alberta, 87th Avenue & 114th Street, EDMONTON, Alberta, Canada.

**SAINT LOUIS UNIVERSITY**, St. Louis, Missouri. Engineering or Economic Geologist. September 1957. Salary depending on qualifications. Apply: Director, Department of Geology and Geological Engineering.

**HAMILTON COLLEGE**, Hamilton, Ontario. A staff-position will be available commencing July or September 1957 for a Curator of Geology. Applicant should have Ph.D. or equivalent with specialized training in paleontology. Duties include classification and organization of university collections of fossils, rocks and minerals, with an additional light teaching load and responsibility to carry out research work. The appointment will probably be initially at the rank of Lecturer or Assistant Professor but will depend on qualifications. Enquiries to the Chairman, Dept. of Geology.

**UNIVERSITY OF NEW MEXICO**, Albuquerque, New Mexico. Ph.D. to teach structural and field geology needed for September. Prefer age 35 or younger. Write Geology Department.

**BOX 78**. Two vacancies for ASSISTANT PROFESSOR, salary \$5400 for 9 months. Ph.D. essential. One as paleontologist, the other as geologist with general background in structural and field studies.

**UNIVERSITY OF WESTERN ONTARIO**, London, Ontario. Applications are invited for appointment as a Lecturer or Assistant Professor of Geophysics. Candidates should have graduate training, preferably at the Ph.D. level. Salary and rank will depend upon qualifications. Duties will include graduate and undergraduate teaching in geophysics and physics or geology. A new geophysical laboratory, providing excellent facilities for research, will be available in 1958. Applications should include statements of experience, research interests and a recent photograph. Address enquiries for further information to Robert J. Utten, Dept. of Physics or Geology.

**BOX 79**. EXPLORATION GEOLOGIST required by well established U. S. company for exploration program in Liberia. Alluvial and foreign experience desirable. Please give full details concerning education and experience.

**SOUTHEAST MISSOURI STATE COLLEGE**, Cape Girardeau, Missouri. Geology teacher for expanding program; Ph.D. or M.S. State training, experience and availability. Retired teachers invited to inquire.

**KANSAS STATE COLLEGE**, Manhattan, Kansas, will need an Instructor in Geology beginning September, 1957. Ph.D. or near Ph.D. desired. Write Head of Dept.

**UNIVERSITY OF WISCONSIN**, Madison, Wisconsin, has some openings for Instructors in Geology for September, 1957. Ph.D. required. Write Chairman, Dept. of Geology.

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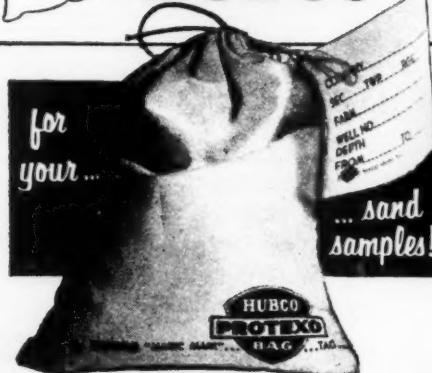
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